



Revised on 22/12/2022

Safety Data Sheet

1 IDENTIFICATION

Product identifier

Trade name (As Labelled): E302-16, E308H-16, 308-15, 308-17, E308-16, E309-16, E309L-16, E310-16, E312-16, E316-16, E316L-16, E347-16, E410-16, E502-16, E505-16 and Super Missileweld (Coated)

Other means of identification: Flux Coated Metal Electrodes
 SDS # 0090

Recommended use and restriction on use

Recommended use: Metal Welding

Restrictions on use: No further relevant information available.

Manufacturer/Importer/Supplier/Distributor information

Importer:

Harris Products Group
 14 Queensland Rd
 Darra, QLD, Australia 4076
 (07) 33753670

Safety Data Sheet Questions: sales@hgea.com.au

Website: <http://www.harrisproductsgroup.com.au>

Poisons Information Centre/Helpline (24 hours) Australia 13 11 26

2 HAZARD(S) IDENTIFICATION

GHS classification of the substance/mixture.

Classified according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

EMERGENCY OVERVIEW: Solid metallic products are generally classified as “articles” and do not constitute a hazardous material in solid form under the definitions of the GHS. Any articles manufactured from these solid products would be generally classified as non-hazardous. However, some hazardous elements contained in these products can be emitted under certain processing conditions such as but not limited to: burning, melting, cutting, sawing, brazing, grinding, machining, milling, and welding. Products in the solid state present no fire or explosion hazard. Small chips, fines, and dust may ignite readily, though. The following classification information is for the hazardous elements which may be released during processing.

GHS Classification(s)

Skin Sensitisation – 1, H317
 Carcinogenicity – 1B, H350
 Specific Organ Toxicity – RE 1, H372
 Aquatic Acute – 1, H400
 Aquatic Chronic – 3, H412

Label elements



Signal word

Danger

Hazard Statements:**H317** - May cause an allergic skin reaction**H350** – May cause cancer**H372** - Causes damage to organs through prolonged or repeated exposure**H400** – Very toxic to aquatic life**H412** – Harmful to aquatic life with long lasting effects**Precautionary Statements:****P201** - Obtain special instructions before use**P202** - Do not handle until all safety precautions have been read and understood**P260** - Do not breathe dust/fume/gas/mist/vapours/spray P261 - Avoid breathing dust/fume/gas/mist/vapours/spray**P264** - Wash thoroughly after handling**P261** – Avoid breathing dust/fume/gas/mist/vapours/spray**P270** - Do not eat, drink or smoke when using this product**P272** - Contaminated work clothing should not be allowed in the workplace**P273** - Avoid release to the environment**P280** - Wear protective gloves/protective clothing/eye protection/face protection**P302+P352** - IF ON SKIN: Wash with plenty of soap and water**P308+P313** - IF exposed or concerned: Get medical advice/attention**P314** - Get medical advice and attention if you feel unwell P321 - Specific treatment (see label)**P321** – Specific treatment (see label)**P333+P313** - If skin irritation or rash occurs: Get medical advice/attention**P362+P364** - Take off contaminated clothing and wash it before reuse**P391** – Collect spillage**Storage Statement(s):****P405** - Store locked up**Disposal Statement(s):****P501** - Dispose of contents/container in accordance with regulations**Unknown Acute Toxicity** Not available**Other Hazards** No information provided

3 Composition/information on ingredients**Chemical characterization: Mixtures****Description:** Mixture: consisting of the following components.

Substances/Mixtures		
CAS #	Ingredient	Proportion %
7789-75-5	Calcium Fluoride	2-10
15096-52-3	Cryolite	0-5
68476-25-5	Feldspar	0-3
1317-65-3	Calcium Carbonate	5-15
7440-03-1	Niobium	0-3
12030-97-6	Potassium Titanate	0-3
1308-38-9	Chromium (III) Oxide	0-0.5
1310-58-3	Potassium Hydroxide	0-0.5
7440-21-3	Silicon	0.1-1
1344-09-8	Sodium Silicate	1-5
7439-98-7	Molybdenum	0-4
7440-47-3	Chromium	15-25
7439-96-5	Manganese	1-3
7440-02-0	Nickel	1-10
13463-67-7	Titanium Dioxide	1-15
7439-89-6	Iron	30-50

Additional information:

For the listed ingredient(s), the identity and exact percentage(s) are being withheld as a trade secret.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: During welding operations, the most significant route of over-exposure is via inhalation of fumes.

INHALATION: Inhalation is not anticipated to be a significant route of over-exposure to the wire or rods. Inhalation of large amounts of particulates generated by these products during metal processing operations may result in pneumoconiosis (a disease of the lungs). Repeated over-exposures, via inhalation, to the dusts or fumes generated by these products may have adverse effects on the lungs with possible pulmonary edema and emphysema (life-threatening lung injuries). Nickel (a component of this product) can cause pulmonary asthma in hypersensitive individuals. Damage to lungs can occur. Inhalation of dusts and fumes of Iron can also cause metal fume fever. Symptoms of metal fume fever can be delayed 24-48 hours. Refer to Section 10 (Stability and Reactivity) for information on the specific composition of welding fumes and gases.

CONTACT WITH SKIN or EYES: Contact of these products with the skin is not anticipated to be irritating. Contact with the wire or rod form of these products can be physically damaging to the eye. Fumes generated during welding operations can be irritating to the skin and eyes. These products also contain Calcium Fluoride and Cryolite, fluoride compounds. Thermal decomposition of this compound can generate fluoride compounds, which are toxic and can cause burns in extreme cases. Burns from fluoride compounds can be delayed. Contact with the hot rods will burn contaminated skin or eyes. Due to the presence of Nickel, See Section 16 for Definition of Ratings prolonged exposure of the eyes may result in sensitization resulting in conjunctivitis (inflammation of the mucous membranes of the eyes). Symptoms of skin over-exposure may include irritation and redness; prolonged or repeated skin over-exposures may lead to allergic contact dermatitis. Contact with the hot electrodes will burn contaminated skin or eyes.

SKIN ABSORPTION: Skin absorption is not known to be a significant route of over-exposure for any component of these products.

INGESTION: Ingestion is not anticipated to be a route of occupational exposure for these products.

INJECTION: Though not a likely route of occupational exposure for these products, injection (via punctures or lacerations in the skin) may cause local reddening, tissue swelling, and discomfort.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Symptoms associated with over-exposure to these products and the fumes generated during welding operations are as follows:

ACUTE: The chief acute health hazard associated with these products would be the potential for irritation of contaminated skin and eyes when exposed to fumes during welding operations. Inhalation of large amounts of particulates generated by these products during metal processing operations can result in pneumoconiosis (a disease of the lungs). Contact with the molten material will burn contaminated skin or eyes.

CHRONIC: Chronic skin over-exposure to the fumes of these products during welding operations may produce dermatitis (red, inflamed skin). Repeated over-exposures to the fumes generated by these products via inhalation can have adverse effects on the lungs (e.g., pulmonary edema and emphysema). Repeated or prolonged ingestion exposures to > 50-100 mg of Iron per day can result in deposition of iron in the body tissues, which can cause disease.

TARGET ORGANS: For fumes: ACUTE: Skin, eyes, respiratory system. CHRONIC: Skin, respiratory system, pancreas and liver.

Composition comments:

The term "Dangerous Components" should be interpreted as a term defined in Hazard Communication standards and does not necessarily imply the existence of a hazard. The product may contain additional nonhazardous ingredients or may form additional compounds under the condition of use. Refer to Sections 2 and 8 for more information.

First-aid measures

EMERGENCY OVERVIEW: These products consist of coated metal rods that are odourless electrodes. There are no immediate health hazards associated with the electrode form of these products. The Nickel and Chromium components of these products are suspect carcinogens. These products are not flammable nor reactive. If involved in a fire, these products may generate irritating iron fumes, a variety of iron compounds, carbon dioxide, carbon monoxide, and metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

Description of first aid measures

Victims of chemical exposure must be taken for medical attention. Rescuers should be taken for medical attention, if necessary. Take a copy of label and SDS to health professional with victim.

SKIN EXPOSURE: If fumes generated by welding operations involving these products contaminate the skin, begin decontamination with running water. If molten material contaminates the skin, immediately begin decontamination with cold, running water. Minimum flushing is for 15 minutes. Victim must seek medical attention if any adverse reaction occurs.

EYE EXPOSURE: If fumes generated by welding operations involving these products enter the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention.

INHALATION: If fumes generated by welding operations involving these products are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

INGESTION: If swallowed call physician immediately! Do not induce vomiting unless directed by medical personnel. Rinse mouth with water if person is conscious. Never give fluids or induce vomiting if person is unconscious, having convulsions, or not breathing.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin, respiratory, pancreas, and liver disorders may be aggravated by prolonged over-exposures to the dusts or fumes generated by these products.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

5 Fire-fighting measures**Extinguishing media**

Water spray, Halon, Dry Chemical, Carbon Dioxide, Foam or any ABC class.

Special hazards arising from the substance or mixture

None – not flammable.

Unusual fire and explosion hazards: When involved in a fire, these products may decompose and produce iron fumes, a variety of nickel, iron and a variety of metal compounds and metal oxides. The hot material can present a significant thermal hazard to firefighters.

FLASH POINT, °C (method): Not flammable.

AUTOIGNITION TEMPERATURE, °C: Not flammable.

Additional information:

Read and understand the Work Safe Australia Code of Practice on Welding Processes and "Standard for Fire Prevention During Welding, Cutting and Other Hot Work" before using this product. Section 274 of the Work Health and Safety Act (the WHS Act.)

6 Accidental release measures**Personal precautions, protective equipment and emergency procedures**

These products are solid metal rods, with no spill or leak hazards.

Environmental precautions:

Avoid discharge into drains, water courses or onto the ground.

Methods and material for containment and cleaning up:

Contain spill, then place in a suitable container. Minimize dust generation. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE). Do not use solvents or thinners.

Methods for cleaning up: Scoop up material and place in a disposal container. Provide ventilation.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage

Handling:

Precautions for safe handling

Do not eat or drink while handling these products. Use ventilation and other engineering controls to minimize potential exposure to these products. All employees who handle this material should be trained to handle it safely. Use in a properly ventilated location. Avoid breathing fumes of these products during welding or brazing operations. Read and understand the manufacturer's instruction and the precautionary label on the product. See the Australian Standard - AS 1674.1 – 1997 – Reconfirmed 2016. Safety in Welding and Allied Processes Australia.

Conditions for safe storage, including any incompatibilities

Storage:

All employees who handle these products should be trained to handle it safely. Use in a well-ventilated location. Avoid breathing fumes of these products during welding operations. Open containers on a stable surface. Packages of these products must be properly labelled. Store packages in a cool, dry location. Storage in an atmosphere that is wet, moist, or highly humid may lead to corrosion of these products. Store away from incompatible materials (see Section 10, Stability and Reactivity).

Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Control parameters

Exposure Guidelines:

Refer to the Safe Environments risk management document – Welding Fume -

<http://www.safeenvironments.com.au/welding-fume/> The exposure standard refers to the publication by Work Safe Australia "Workplace Exposure Standard for Airborne Contaminants" with the Date of Effect being 22 December 2011. Work Safe Australia note that "exposure standards do not represent a fine dividing line between a healthy and unhealthy work environment. Natural biological variation and the range of individual susceptibilities mean that a small number of people might experience adverse health effects below the exposure standard.

Hazard Classification for Chemical Composition					
CAS #	Ingredient	TWA ppm	TWA mg/m ³	STEL ppm	STEL mg/m ³
7789-75-5	Calcium Fluoride		2.5		NE
15096-52-3	Cryolite		2.5		NE
68476-25-5	Feldspar		NE		NE
1317-65-3	Calcium Carbonate Dust		10		NE
7440-03-1	Niobium		NE		NE
12030-97-6	Potassium Titanate		NE		NE
1308-38-9	Chromium (III) Oxide		0.5		NE
1310-58-3	Potassium Hydroxide		NE		2
7440-21-3	Silicon		10		NE
1344-09-8	Sodium Silicate		NE		NE
7439-98-7	Molybdenum		10		NE
7440-47-3	Chromium Metal		0.05		NE
7439-96-5	Manganese Fume & Dust		1		3
7440-02-0	Nickel		1		NE
13463-67-7	Titanium Dioxide		10		NE
7439-89-6	Iron		NE		NE

Reference: ACGIH Biological Exposure Indices

Refer to Worksafe Australia for standards:

http://www.safeworkaustralia.gov.au/sites/SWA/about/Publications/Documents/639/Workplace_Exposure_Standards_for_Airborne_Contaminants.pdf

Exposure controls**Personal protective equipment:****General protective and hygienic measures:**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Engineering controls: No further relevant information available.

Ventilation

Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

Breathing equipment:

Where an inhalation risk exists, wear a Class P2 (Metal fume) respirator. If using product in a confined area, wear an Air-line respirator.

Protection of hands:

Wear welding gloves for routine industrial use.

Eye protection:

Wear safety glasses with side shields (or goggles). When these products are used for welding, it is recommended that safety glasses, goggles, or face-shield with filter lens of appropriate shade number (per ANSI Z49.1-1988, "Safety in Welding and Cutting") be worn.

Body protection: Protective work clothing

**9 Physical and chemical properties**

Information on basic physical and chemical properties:

General Information

PRODUCT			
Appearance - Product	Metallic rods or wires	Physical State - Product	Solid
Odour - Product	Odourless	Odour Threshold	Not Available
Flammability	Not Available	Flash Point	Not Available
pH	Not Applicable	Auto Igniting	Not Available
Melting point/range	Not Available	Solubility water	Insoluble
Vapour Pressure, mmHg@1284°C	Not Available		
Vapour Density	Not applicable	Density at 20°C (68°F)	Not Applicable
Boiling Point & boiling range	3000°C	Evaporation Rate	Not Available
Freezing/Melting Point	1535°C	Specific Gravity (water = 1)	7.86

10 Stability and reactivity

Stability: Stable.

Decomposition Products: Iron fumes, a variety of iron compounds, carbon dioxide, carbon monoxide, metal oxides.

NOTE: The composition and quality of welding fumes and gases are dependent upon the metal being welded, the process, the procedure, and the electrodes used. Other conditions that could also influence the composition and quantity of fumes and gases to which workers may be exposed include the following: any coatings on metal being welded (e.g. paint, plating, or galvanizing), the number of welders and the volume of the work area, the quality of ventilation, the position of the welder's head with respect to the fume plume, and the presence of other contaminants in the atmosphere. When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in Section 2 (Composition and Information on Ingredients). Fume and gas decomposition products, and not the ingredients in the electrode, are important. Concentration of the given fume or gas component may decrease or increase by many times the original concentration. New compounds in the electrode may form. Decomposition products of normal operations include not only those originating from volatilization, reaction, or oxidation of the product's components but also those from base metals and any coating (as noted previously). The best method to determine the actual composition of generated fumes and gases is to take an air sample from inside the welder's helmet if worn or in breathing zone. For additional information, refer to the American Welding Society Publication, "Fumes and Gases in the Welding Environment".

Materials with which substance is incompatible: Strong acids, strong oxidizers, halogens, phosphorous.

Hazardous polymerization: Will not occur.

Conditions to avoid: Avoid uncontrolled exposure to extreme temperatures and incompatible materials.

11 Toxicological information

Information on toxicological effects:

Toxicity data: Presented below are toxicological data available for the components of these products present in concentration greater than 1%.

CAS	Name	Oral Toxicity LD50	Intravenous Toxicity LD50	Inhalation Toxicity LD50
7789-75-5	Calcium Fluoride	4250mg/kg Rat	>1500mg/kg Rat 2638mg/kg Mouse	
15096-52-3	Cryolite	>5mg/kg Rat		
68476-25-5	Feldspar	Not Established		
1317-65-3	Calcium Carbonate	Not Established		
7440-03-1	Niobium	>10gm/kg Rat		
12030-97-6	Potassium Titanate	Not Established		
1308-38-9	Chromium (III) Oxide	Not Established		
1310-58-3	Potassium Hydroxide	273mg/kg Rat		
7440-21-3	Silicon	3160 mg/kg Rat	>5000 mg/kg Rabbit	
1344-09-8	Sodium Silicate	1960mg/kg Rat	>4640mg/kg Rabbit	
7439-98-7	Molybdenum	Not Established		
7440-47-3	Chromium Metal	27.5mg/kg Rat		
7439-96-5	Manganese	>2000 mg/kg Rat		IRRITATION Eye (rabbit): 500 mg/24h – mild Skin (rabbit): 500 mg/24h - mild
7440-02-0	Nickel	5000 mg/kg Rat		
13463-67-7	Titanium Dioxide		0.1mg/kg Rat	
7439-89-6	Iron	30mg/kg Rat		

IRRITANCY OF PRODUCT: Dusts or fumes of these products may be irritating to contaminated skin and eyes. Fumes may be irritating to the respiratory system.

SENSITIZATION TO THE PRODUCT: Hypersensitivity to the Nickel component of these products can cause allergic contact dermatitis, asthma, and conjunctivitis.

Mutagenicity: These products are not reported to produce mutagenic effects in humans. Animal mutation data are available for the Calcium Fluoride, Chromium (III) Oxide, Cryolite, Molybdenum, Nickel, and Potassium Hydroxide components of these products; these data were obtained during clinical studies on specific animal tissues exposed to high doses of this compound.

Embryo toxicity: These products are not reported to produce embryo toxic effects in humans.

Teratogenicity: These products are not reported to cause teratogenic effects in humans. Clinical studies on test animals exposed to relatively high doses of the Calcium Fluoride, Molybdenum, and Nickel components of these products indicate teratogenic effects.

Reproductive Toxicity: These products are not reported to cause reproductive effects in humans. Clinical studies on test animals exposed to relatively high doses of the Calcium Fluoride and Molybdenum components of these products indicate adverse reproductive effects.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin, respiratory, pancreas, and liver disorders may be aggravated by prolonged over-exposures to the dusts or fumes generated by these products.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

BIOLOGICAL EXPOSURE INDICES: Currently, there are no Biological Exposure Indices (BEIs) associated with components of these products.

12 Ecological information

ENVIRONMENTAL STABILITY: The components of these products are expected to persist in the environment for an extended period of time. Iron, the major component in these products, will react with water and air to form a variety of stable iron oxides. The following environmental data are available for components of these products:

CAS#	Ingredient	Result	Species	Exposure
7440-02-0	Nickel	0.0000475mg/L – LC50 0.00513mg/L – EC50	Fish Crustacea	96 Hours 48 Hours
1310-58-3	Potassium Hydroxide	Acute LC50 80 mg/L	Fish	96 Hours
7439-96-5	Manganese	>3.6mg/L - LC50 > 1.6mg/L – EC50	Fish Crustacea	96 Hours 48 Hours
7439-89-6	Iron	13.6 mg/L	Fish	96 Hours
7789-75-5	Calcium Fluoride	No Data Available		
15096-52-3	Cryolite	42.5mg/L >100mg/L	Fish Water Flea	96 Hours 48 Hours
68476-25-5	Feldspar	No Data Available		
1317-65-3	Calcium Carbonate	No Data Available		
7440-03-1	Niobium	No Data Available		
12030-97-6	Potassium Titanate	No Data Available		
1308-38-9	Chromium (III) Oxide	>10,000mg/L	Fish	96 Hours
7440-21-3	Silicon	No Data Available		
1344-09-8	Sodium Silicate	No Data Available		
7439-98-7	Molybdenum	644mg/L	Fish	96 Hours
13463-67-7	Titanium Dioxide	No Data Available		
7440-47-3	Chromium Metal	14.3mg/L 0.07mg/L	Fish Water Flea	96 Hours 48 Hours

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Animal studies on manganese, nickel, and silicon indicate various health effects after ingestion and exposures.

EFFECT OF CHEMICAL ON AQUATIC LIFE: These products may cause adverse effects on aquatic life, especially if large quantities are released into bodies of water. Low chronic aquatic limits indicate a high chronic hazard; it may be concentrated to toxic levels in food chain. The Nickel component of these products is toxic to aquatic life.

13 Disposal considerations

Waste treatment methods

Recommendation:

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Uncleaned packagings: Empty containers should be taken to an approved waste handling site for recycling or disposal.

Recommendation: Disposal must be made according to official regulations.

14 Transport Information

This product is not classed as hazardous.

UN-Number DOT, ADR, ADN, IMDG, IATA	Not Regulated
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	Not Regulated
Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA Class	Not Regulated
Packing group DOT, ADR, IMDG, IATA	Not Regulated
Environmental hazards: Marine pollutant:	No
Special precautions for user	Not applicable.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
UN "Model Regulation":	Not regulated.

15 Regulatory information

Product Name: E302-16, E308H-16, 308-15, 308-17, E308-16, E309-16, E309L-16, E310-16, E312-16, E316-16, E316L-16, E347-16, E410-16, E502-16, E505-16 and Super Missileweld (Coated)

Safety, health and environmental regulations/legislation specific for the substance or mixture:

Poison Schedule:

Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications:

Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Refer to the Australian Inventory of Chemical Substances – AICS at <https://www.nicnas.gov.au/chemicals-on-AICS#main>

Poison schedule: Classified as a Schedule 6 (S6) Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP). <https://www.legislation.gov.au/Details/F2016L01638>

Classifications: Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

16 Other information

References

Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice

Standard for the Uniform Scheduling of Medicines and Poisons

Australian Code for the Transport of Dangerous Goods by Road & Rail.

Modell Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Workplace exposure standards for airborne contaminants, Safe work, Australia

American Conference of Industrial Hygienists (ACGIH)

Globally Harmonised System of classification and labelling of chemicals.

WELDING (1): Due to the diversity of welding techniques, processes, materials used, nature of the surface being welded and the presence of contaminants, the fumes & gases associated with welding will vary in composition and quantity. When assessing a welding process, the toxic fumes generated may not only be associated with the parent metal, filler wire or electrode. The welding/cutting arc may generate nitrogen oxides, carbon monoxide & other gases, whilst UV radiation emitted from some arcs generates ozone. Ozone may irritate mucous membranes and cause pulmonary oedema & haemorrhage. Shielding gases (e.g. carbon dioxide and inert gases i.e. argon and helium) in high concentrations, in confined spaces, may reduce oxygen in the atmosphere to dangerous levels, resulting in possible asphyxiation.

WELDING (2): In addition to complying with individual exposure standards for specific contaminants, where current manual welding processes are used, the fume concentration inside the welder's helmet should not exceed 5 mg/m³ (unless otherwise classified) when collected in accordance with Australian Standard AS 3853.1: Fume from welding and allied processes - Guide to methods for the sampling and analysis of particulate matter and AS 3853.2: Fume from welding and allied processes - Guide to methods for the sampling and analysis of gases. Airway irritation and metal fume fever are the most common acute effects from welding fumes. Reported to cause reduced sperm quality in welders.

WELDING (3): Other gases and fumes associated with welding processes include: Inert shielding gases (e.g. argon, carbon dioxide, helium) which may reduce the atmospheric oxygen content in poorly ventilated areas. UV-radiation and Infra-Red radiation may decompose chlorinated degreasing agents to form highly toxic and irritating phosgene gas. This may occur if a metal has been degreased but inadequately dried or when vapours from a nearby degreasing bath enter the welding zone.

WELDING (4): Welding fumes may contain a wide variety of chemical contaminants, including oxides and salts of metals and other compounds which may be generated from electrodes, filler wire, flux materials and from the welded material (e.g. painted surfaces). Welding stainless-steel and its alloys generates nickel and chromium (VI) compounds. Welding fumes are retained in the lungs. Sparingly soluble compounds may be released slowly from the lungs. Welding fume is classified as possibly carcinogenic to humans (IARC Group 2B).

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

Disclaimer:

We urge each end user and recipient of this SDS to study it carefully. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of this product.

Harris Products Group cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for use, handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

WARNING: PRODUCT COMPONENTS PRESENT HEALTH AND SAFETY HAZARDS. READ AND UNDERSTAND THIS MATERIAL SAFETY DATA SHEET (M.S.DS.). ALSO, FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

The information contained herein relates only to the specific product. If the product is combined with other materials, all component properties must be considered. **BE SURE TO CONSULT THE LATEST VERSION OF THE MSDS. MATERIAL SAFETY DATA SHEETS ARE AVAILABLE FROM HARRIS PRODUCTS GROUP** Harris Products Group, HGE PTY LTD, Brisbane | Melbourne | Perth | New Zealand, 14 Queensland Rd, Darra, QLD 4076, Phone: (07) 3375 3670 | Fax: (07) 3375 3620, Email: sales@hgea.com.au, www.harrisproductsgroup.com.au,

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[End of SDS]